Myong-Hee Sung

EDUCATION/TRAINING

1986-1990 **B.S. Mathematics**, Seoul National University, Seoul, Korea.
1990-1997 **Ph.D. Mathematics**, State University of New York at Stony Brook, NY, USA.
Advisor: Claude LeBrun
Field: Complex Differential Geometry
1997-1999 **Research Associate** Institute for Physical Science and Technology.
University of Maryland, College Park
Mentor: James A. Yorke
Field: Numerical Analysis of Nonlinear Dynamical Systems and Chaos

POSITIONS

1999-2000 **Assistant Professor** Department of Mathematics and Statistics
American University

2000-2002 **Research Assistant Professor**, Department of Mathematics and Statistics
American University (in conjunction with the next position at NIH)

2000-2002 **Intergovernmental Personnel Act Researcher,** Molecular Statistics and Bioinformatics Section, Biometric Research Branch
National Cancer Institute/National Institutes of Health

2002- **Staff Scientist/Expert**, Biometric Research Branch
National Cancer Institute/National Institutes of Health

HONORS

2002- Referee for the journals *Physica D, IEEE Control Systems Magazine on Systems Biology, Bioinformatics, Cellular and Molecular Life Sciences, Human Immunology*.
2002 NIH filed a provisional patent application on *MHCpepPro*, a prediction method for MHC binding peptides.
2004 Biographical information included in *Who's Who in America 2004*.

PEER-REVIEWED PRIMARY PUBLICATIONS

Zhike Zi, Kwang-Hyun Cho , **Myong-Hee Sung**, Xuefeng Xia, and Zhirong Sun: *In Silico* Identification of the Key Components and Steps in IFN-γ Induced JAK-STAT Signaling Pathway. *FEBS Lett.* 2005, **579** 1101-1108.

Myong-Hee Sung and Richard Simon: *In Silico* Simulation of Inhibitor Drug Effects on NF-κB Pathway Dynamics *Molecular Pharmacology* 2004, **66** no. 1, pp.70-75.

B. Bielekova, **M.-H. Sung**, N. Kadom, R. Simon, H. McFarland, and R. Martin: Expansion and Functional Relevance of High-avidity Myelin-specific CD4+ T Cells in Multiple Sclerosis *J. Immunology* 2004, **172** pp.3893-3904.

M.-H. Sung and R. Simon: Genome-wide Conserved Epitope Profiles of HIV-1 Predicted by Biophysical Properties of MHC Binding Peptides *J. Computational Biology*, Vol. 11, No. 1 (2004) pp.125-145.

Myong-Hee Sung, Yingdong Zhao, Roland Martin, and Richard Simon: T-cell Epitope Prediction with Combinatorial Peptide Libraries *J. Computational Biology* Vol. 9, No. 3 (2002) pp. 527-539.

R. Martin, B. Gran, Y. Zhao, S. Markovic-Plese, B. Bielekova, A. Marques, **M.H. Sung**, B. Hemmer, R. Simon, H.F. McFarland, and C. Pinilla: Molecular Mimicry and Antigen-Specific T Cell Responses in Multiple Sclerosis and Chronic CNS Lyme Disease, *J. Autoimmunity* Vol. 16 (2001) pp. 187-192.

Myong-Hee Sung, James A. Yorke, and Peter Calabrese: Using Differential Equation Solvers to Compute the Stable Manifold, Technical Report.

M.-H. Sung: Kähler Surfaces of Positive Scalar Curvature, *Annals of Global Analysis and Geometry* Volume 15, Issue 6 (1997) pp. 509-518.

OTHER PUBLICATIONS

Carr, D.B. and **Sung, M.-H.** (2004) Graphs for Representing Statistics Indexed by Nucleotide or Amino Acid Sequences. *COMSTAT, Proceeding in Computational Statistics, 16th Symposium,* held in Prague Czech Rep. pp.73-84.

Sung, M.-H. and Simon, R. (2004) Candidate Epitope Identification Using Peptide Property Models: Application to Cancer Immunotherapy. *Methods* on "Bioinformatics in Vaccine Design" 34 (4) pp.460-467.

Sung, M.-H. (1999) *Proceedings of the Conference on Geometric Structures on Manifolds*, *Research Institute of Mathematics Lecture Note Series* 46 pp. 179-187.

PRESENTATIONS (* Invited)

"Modeling Approaches for Optimization of Therapy against Oncogenic Molecular Networks; Methods to Predict Antigenic Peptides for T Lymphocytes" *
Johns Hopkins University, Dept. of Biomedical Engineering, Baltimore, MD (9/2004)

"What Mathematics and Computation can do for Molecular Cell Biology and Immunology" *
The Wistar Institute, University of Pennsylvania, Philadelphia, PA (4/2004)

"Dynamic Control of IL-2 Production by the NF-κB/Rel Network in T Cells" (poster)
International Conference on Systems Biology, Washington University, St. Louis, MO (11/2003)

"Dynamic Control of IL-2 Production by the NF-κB/Rel Pathway in T Cells" (poster)
NIH Research Festival, Bethesda, MD (10/2003)

"Mathematical Modeling and Simulation of NF-κB/Rel Kinetics in T Cells" *
Genomics and Proteomics Interest Group Seminar Series
The George Washington University, Washington, DC (9/2003)

"Computational Tools for Identification of Potential T Cell Epitopes" (poster)
Basic Aspects of Vaccines, Uniformed Services University of the Health Sciences, Bethesda, MD (4/2003)

"A Dynamical Model of the NF-κB Activation Module" (poster)
International Symposium on Computational Cell Biology, Lenox, MA (3/2003)

"Prediction of Immune Phenotypes for Peptides" (poster)
Bioinformatics, Biostatistics, and Computational Biology Faculty Retreat
National Cancer Institute, Bethesda, MD (11/2002)

"Prediction of MHC-peptide Binding based on Amino Acid Properties" (poster)
Cold Spring Harbor Laboratory meeting on *Molecular Approaches to Vaccine Design*
Cold Spring Harbor Laboratory, New York (11/2001)

"Finding Potent Peptides for a Specific T Cell Clone"
National Cancer Institute, Bethesda, MD (4/2001)

"Introduction to Nonlinear Dynamics" *
National Cancer Institute, Bethesda, MD (6/2000)

"Computing Stable Manifolds" *
American University, Washington DC (7/1999)

"Using Differential Equation Solvers to Compute the Stable Manifold"
SIAM Conference on Applications of Dynamical Systems, Snowbird, UT (5/1999)

"Computing 1D Stable Manifolds of Non-invertible Dynamical Systems" *
Howard University, Washington DC (5/1999)

"Dynamical Systems and Stable Manifolds" *
Eastern Connecticut State University, Willimantic (4/1999)

"Computing 1D Global Stable Manifolds through the Critical Locus for a Non-invertible Map"
Penn-State/Maryland Workshops on Dynamical Systems (3/1999)

"Computing Stable Manifolds of Non-invertible Maps"
Applied Dynamics Seminar, **University of Maryland, College Park** (1998)

"Kahler Surfaces of Positive Scalar Curvature" *
Workshop on Geometric Structures and Topology of Low-dimensional Manifolds: Gauge Theory
Seoul National University, Seoul, Korea (7/1997)

"Kahler Metrics of Positive Scalar Curvature on Blown-up Ruled Surfaces" *
Tufts University, Boston (1996)